

## **SESSION 3 – REGIONAL SEDIMENT MANAGEMENT I**

### **CHAIR**

Barry W. Holliday, U.S. Army Corps of Engineers

### **COORDINATOR**

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### **TITLE OF PRESENTATIONS AND SPEAKERS**

“The Corps’ Regional Sediment Management Research Program” by William McAnally, U.S. Army Corps of Engineers

“Regional Management – Ports Perspective” by Richard Gorini, J. Simmons Group

“RSM Experience and Issues – Vicinity Ponce de Leon Inlet, Florida” by R. Bruce Taylor, Taylor Engineering

“Fine Sediment Dynamics at a Regional Scale” by Ashish Mehta, University of Florida

“Support for Decision Making in Evaluating Proposed Dredging Projects” by Simeon Hahn, Mary Matta, and Alyce Fritz; National Ocean Service, NOAA

### **SUMMARY**

This session highlighted research and technology for improving the MTS by managing sediment resources flowing into and through the navigation system’s channels, locks, and harbors. In doing so, it sought to:

- Identify present understanding of managing sediment on a regional scale.
- Identify gaps in research and technology that are needed for effective operation and maintenance of the MTS.
- Foster partnerships between agencies and organizations engaged in understanding and managing sediment resources.

Topics presented at this session include an overview of the Corps’s RSM research and development program; technical innovations and tools for better sediment management; and case histories of success stories in beneficial use. Speakers represented a diverse set of interests and organizations, including the private sector and academia.

### The Corps’ Regional Sediment Management Research Program

Many water resource projects are designed and operated to remedy local sediment problems, sometimes at the expense of creating even larger problems some distance away. Successful project design and operation requires that sediment issues be resolved at both local and regional levels, yet resource managers lack the information and tools needed to make informed decisions. These challenges adversely affect navigation; flood and storm damage reduction efforts; and environmental quality in water resource projects. The U.S. MTS Task Force provided a national vision for MTS 2020, recommending R&D on overall effective sediment management which includes

“holistic watershed and local/regional planning efforts.” To meet this vision, a Regional Sediment Management Program is currently being developed to (a) provide knowledge and tools needed for holistic regional sediment management within USACE water resource projects to achieve economic and environmental sustainability, and (b) enable project planning, design, construction, operation, and maintenance that will minimize disruption of natural sediment pathways, or mediate natural processes that have adverse environmental or economic impacts.

#### Regional Management – Ports Perspective

Richard Gorini serves as Executive Vice President of the J. Simmons Group, a project management consulting firm for the Port of Houston. In his presentation, he showed how dredged material is a resource. Beneficial uses of dredged material were a key element in the Houston Ship Channel deepening project. During the planning stage, an Interagency Coordination Team (ICT) was formed with a top-down commitment to bottom-up solutions. The ICT had twelve members from federal agencies, Texas state agencies, and the Ports of Houston and Galveston. A subgroup, the Beneficial Uses Group, worked to develop a utilization plan for the dredged material. In doing so, they carefully considered the potential environmental, economic, and engineering impacts associated with using dredged materials. They also conducted an outreach to the community, asking how to best improve the project. The end result was a Disposal Area Management Plan that provides a capacity for handling

expected dredged material for the next 50 years.

#### RSM Experience and Issues – Vicinity Ponce de Leon Inlet, Florida

R. Bruce Taylor’s presentation addressed three separate programs with inherent yet related sediment management requirements that impact national, regional, and local public interests. The programs include two federally authorized navigation projects, the Intracoastal Waterway (St. Johns Harbor to Miami) and the Ponce De Leon Inlet Navigation project, as well as the State of Florida’s Beach Management Program. Initiatives to effect sound regional sediment management for all of these projects has revealed competing project requirements and conflicting federal, state, and local interests.

Dr. Taylor discussed the problems encountered, solutions considered, and actions taken. He outlined several impacts and payoffs for these programs: accomplishment of multiple project/program objectives, the establishment of community support, and the implementation of effective regional sediment management encompassing multiple programs.

#### Fine Sediment Dynamics at a Regional Scale

Regional examinations of fine sediment transport related problems require development of regional sediment budgets and meso-scale modeling approaches. Delineation of boundaries for sediment budget is easier for the estuarine environment in comparison with the open coast, where the offshore boundary is especially difficult to establish. As a result, our present ability

to model open coast transport of fine sediment is rudimentary. The Loxahatchee River estuary on the east coast of Florida receives sand from the littoral system and fine-grained material from the river tributaries. In order to deal with the problem of excessive sedimentation in the central bay of this estuary, both sand and fine sediment budgets have been developed on a preliminary basis. Through careful suspended sediment flux measurements and bed load trap measurements it is proposed to refine the budgets for an assessment of future needs to manage sedimentation in the central bay. Along the open coast, it appears possible to use known formulations for cross-shore and alongshore fine sediment fluxes to model shoreline changes due to wave action. Comparison between measured changes and diagnostic simulations indicate qualitative agreement; for quantitative prediction considerable additional field data and model development are required.

#### Support for Decision Making in Evaluating Proposed Dredging Projects

NOAA recently completed an effort to assist the State of Delaware in developing guidance to evaluate proposed dredging projects. The Delaware Statewide Dredging Policy Framework manual covers all aspects of the decision-making process, including economic benefits, potential environmental impacts of the dredging, disposal options, and the potential for beneficial reuses and habitat restoration. The manual was developed in cooperation with the private sector, industry, federal and state agencies, environmental groups, and citizens. The guidance is intended to support evaluations of environmental impacts in

support of dredging decisions, and provide suggestions for project designers on modifying projects to reduce environmental impacts. A tiered framework was created to determine how to identify potential effects before dredging (whether literature information is sufficient or whether site-specific sampling would be helpful). Guidance and recommendations for evaluating impacts during dredging operations, and monitoring post-dredging are also provided. The document also provides references to other sources of information useful in the decision-making process and checklists to identify habitat and resources that might be affected.

This effort will improve decision-making in the State of Delaware and will reduce environmental impacts of dredging projects. It also serves as a useful model for other areas by providing a template for discussions with local stakeholders in port and coastal areas throughout the country.